

### AMENDMENTS TO THE CLAIMS

- 1-12. (Cancelled)
13. (Currently Amended) A method for producing an evolved protein involved in methionine biosynthesis pathway, the method comprising:
- a) disrupting *metE* gene in an initial microorganism to yield a modified microorganism, wherein the ability of the modified microorganism to grow is impaired when the modified microorganism is grown on a minimal medium containing no methionine, S-adenosylmethionine, homocysteine, or cystathionine;
  - b) culturing the modified microorganism obtained in step (a) on ~~the said~~ minimal medium containing no methionine, S-adenosylmethionine, homocysteine, or cystathionine for multiple generations, under selection pressure in the presence of methylmercaptan, allowing the modified microorganism to evolve a metabolic pathway to compensate for impaired growth;
  - c) selecting an evolved microorganism from step (b) able to grow on ~~the said~~ minimal medium ~~further comprising methylmercaptan and containing no methionine, S-adenosylmethionine, homocysteine, or cystathionine~~, wherein at least one protein has evolved in the methionine biosynthesis pathway allowing the modified microorganism to produce methionine and proliferate; and
  - d) isolating the evolved protein.
14. (Previously Presented) The method as claimed in Claim 13, wherein the isolated evolved protein is purified.
- 15-43. (Cancelled)
44. (Previously Presented) The method of claim 13, wherein disruption of the *metE* gene is performed by directed mutation or deletion of the *metE* gene or directed modification of a promoter of the *metE* gene.
45. (Previously Presented) The method of claim 13, wherein the disruption comprises removal of most of the *metE* gene.

46. (Previously Presented) The method of claim 13, wherein the *metE* gene is replaced with a selection marker gene.
47. (Previously Presented) The method of claim 13, wherein the microorganism is a bacterium.
48. (Currently Amended) The method of claim 13, wherein the microorganism is selected from *Escherichia* ~~sp.~~ spp.
49. (Previously Presented) The method of claim 48, wherein the microorganism is *E. coli*.